SPATIAL ABILITY AND ACHIEVEMENT AMONG THE HIGH SCHOOL STUDENTS

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Abstract

The present study is entitled as "Spatial Ability and Achievement among the High School Students". The values present a true view point of the growth of any society or nation. They tell us to what degree a society or nation has developed itself. Values are intrinsic worth, principles and traits on which actions and beliefs are based. The purpose of the present study was to find out the Spatial Ability and Achievement of high school students. The research type was a survey method, which consists of purposive sampling of 300 high school students in Virudhunagar district. The interpretation of data was done with statistical methods in percentage analysis, mean, standard deviation and 't'-test. *Keywords:* spatial ability, achievement, survey method, percentage analysis, standard deviation and 't'-test.

Introduction

Smith (1964) and Ghiselli (1973) summarized studies in which spatial tests have been used to predict job performances. Spatial tests add little to the prediction of success in traditional school subjects; even Geometry after the general ability has been entered into the regression. There are several possible reasons for the gulf between the theoretical importance of spatial abilities and their practical utility in predictive studies. First it may be that, beyond some minimum level of competence, spatial abilities are simply not that important for success in school or work. Second, the strength of spatial ability relative to other abilities, particularly verbal and phonemic fluency abilities, may be more important for predicting how problems are represented and solved rather than whether they can be solved. Third, the criterion measures used in most studies may be biased in favor of other abilities, such as verbal or reasoning skills. Fourth, existing tests may not be very good measures of spatial abilities.

Individuals can set personal goals. A student may set a goal of high mark in an exam. Managing goals can give returns in all areas of personal life. Knowing precisely what one wants to achieve makes clear what to concentrate and improve on, and often subconsciously prioritizes that goal. Goal setting and planning promotes long-term vision and short-term motivation. It focuses intention, desire, acquisition of knowledge, and helps to organize resources. The higher the combination of intelligence and the motivation, the higher is the achievement. Therefore, the act of achieving or successful performing of a person regarding his higher values and objectives through scientific assessment with public acceptance is called achievement. In any type of sustainable development, there must be three sets of objectives – knowledge, skill and values. Achievement is possible for those who are concentrating on their objectives with total commitment and hard work. Indeed adolescents' achievement is due to much more than their intellectual ability (Lourdhusamy, 2012).

At the high school stage of general education, courses are diversified as to enable the pupils to study a group of any three subjects in depth with freedom in grouping of subjects. To ensure the balanced development of the adolescents total personality, the curriculum provides half the time to electives, one-fourth of the time to language and one- fourth to physical education, arts and crafts, moral and spiritual education.

Significance of the Study

The present attempt is to study the spatial ability and achievement among the high school students. The present study will be useful for students as well as teachers, because the knowledge of the relationship of these factors under study will enable students to plan their spatial ability keeping in view of these factors. The present study will provide an insight to the skillful of where stuff is in relation to other stuff. Ability to apprehend or perceive path or expansion. Spatial ability is the occupation to see the ocular earth accurately, to achieve transformations and modifications upon one's verbal perceptions, and to be competent to recomposed aspects of one's optical know, even in the absence of relative physical stimuli Ability for goods extension in track. Ability of an individual is to understand differences and relationships between objects in space to perceive the spatial proportion of an object, including oneself. This understanding will also assist the teachers to create student oriented practices in inculcating good spatial ability at school. And also proper training and guidance may be given to the children accordingly to develop their self-concept, lower the anxiety level and to improve the academic achievement.

In the present context it is felt that in India achievement is the outcome of training imparted to a student by the teacher in school situation. Though our examination system lacks objectivity and a scientific picture of the real achievement yet it is the only method to get academic achievement. Therefore the present study may prove to be of great value for students and teachers in dealing effectively with the various problems arising on the achievement of the students. The study will also have great significance for students and teachers in providing the necessary impetus to actively improve their spatial ability, which actually defines the achievement of the students. It has therefore been considered essential to select this topic of study and it has been programmed to study the spatial ability and achievement among the high school students.

Objectives of the study

- To find out the level of spatial ability among the high school students.
- To find out the level of achievement among the high school students.

Null Hypothesis

- There is no significant in spatial ability among the high school students with reference to gender.
- There is no significant difference in achievement among the high school students with reference to gender
- There is no significant relationship between spatial ability and achievement among the high school students.

Methodology

A descriptive survey method was adopted by the researcher to conduct this study.

Population for the Study

The population for the present study is high school students studying in Srivilliputtur Taluk.

Sample for the Study

In the present study, random sampling technique is employed. The sample for the present study consists of 300 high school students from 10 schools in Srivilliputtur Taluk.

Tool

- Spatial ability Inventory among the high school students is to be constructed and validated by investigator and guide.
- The achievement refers to the total mark scored in the half yearly examination which is the academic year 2021-2022.

Statistical Techniques

Percentage, Mean, standard Deviation, t-test, ANOVA and F-test.

Analysis of data

Objective 1

To find out the level of spatial ability among the high school students.

Table 1 Level of Spatial Ability among the High School Students

Low		Mod	erate	High	
Count	%	Count %		No.	%
35	11.7	201	67.0	64	21.3

It is inferred from the above table that 11.7% of have low, 67.0% of them have moderate and 21.3% of them have high level of Spatial ability among the high school students.

Objective 2

To find out the level of achievement among the high school students.

Lo)W	Mod	erate	High	
Count %		Count %		No.	%
48	16.0	198	66.0	54	18.0

Table 2 Level of Achievement among the High School Students

It is inferred from the above table that 16.0% of have low, 66.0% of them have moderate and 18.0% of them have high level of achievement among the high school students.

Null Hypothesis 1

There is no significant difference in spatial ability among the high school students with reference to gender

Table 3 Significant Difference in Spatial Ability among the
High School Students with Reference to Gender

Gender	Ν	Mean	SD	Calculated 't' value	Remarks at 5% level
Male	130	41.44982	10.53048	0.960	NS
Female	170	41.43062	9.31735	0.900	110

(At 5% level of significance, for df 298, the table value of 't' is1.96)

It is inferred from the above table that calculated 't' value (0.960) is less than the table value (1.96) for df (298) at 5% level of significance. Hence the null hypothesis is accepted. It shows that there is no significant difference in Spatial ability among the high school students with reference to gender.

Null Hypothesis: 2

There is no significant difference in achievement among the high school students with reference to gender

High School Students with Reference to Gender							
Gender	Ν	Mean	SD	Calculated 't' value	Remarks at 5% level		
Male	130	323.67492	58.08778	0.950	NS		
Female	170	323.74002	59.28200	0.750	115		

Table 4 Significant Difference in Achievement among the

(At 5% level of significance, for df 298, the table value of 't' is1.96)

It is inferred from the above table that calculated 't' value (0.950) is less than the table value (1.96) for df (298) at 5% level of significance. Hence the null hypothesis is accepted. It shows that there is no significant difference in achievement among the high school students with reference to gender.

Null Hypothesis 3

There is no significant relationship between spatial ability and achievement among the high school students.

				8 8		
Study Habits		Academic Achievement		$\sum XY$	Calculated 'r' value	Remarks
$\sum X$	$\sum X^2$	$\sum Y$	$\sum Y^2$	16033077	0.060	NS
43167	111354	6240547	42364694	10055077	0.000	115

Table 5 Relationship between Spatial Ability and Achievement among the High School Students

(Table value of 'r' is 0.088, S - Significant)

It is inferred from the above table that the calculated 'r' value (0.060) is less than the table value (0.088) at 0.05 level of significance. Hence the null hypothesis is accepted. This shows that there is no significant relationship between spatial ability and achievement among the high school students.

Percentage Wise Analysis

- 11.7% of have low, 67.0% of them have moderate and 21.3% of them have high level of Spatial ability among the high school students.
- 10.8% of the male students have low, 61.5% of them have moderate and 27.7% of them have high level of Spatial ability among the high school students.
- 16.0% of have low, 66.0% of them have moderate and 18.0% of them have high level of achievement among the high school students.
- 17.7% of the male students have low, 63.8% of them have moderate and 18.5% of them have high level of achievement among the high school students.

Inferential Analysis

- There is no significant difference in Spatial ability among the high school students with reference to gender.
- There is no significant difference in achievement among the high school students with reference to gender.
- There is no significant relationship between spatial ability and achievement among the high school students.

Interpretations

The 't' test result shows that there is significant difference in Spatial ability among the high school students with reference to locality of school. (i.e) the mean values of urban students are better than the rural students in their study habits. This may be due to the fact that the urban students may have more opportunity to learn various sources like library; borrow books, magazines, newspapers and internet facilities and also they may have to use their facilities in day to day life. So they have high level of spatial ability

The 't' test result shows that there is significant difference in achievement among the high school students with reference to medium of instruction. The mean values of Tamil medium students are better than the English medium students. This may be due to the fact that the Tamil medium teachers should be sought by the guidance and counseling workers in order to plan for right type of study schedule for improvement in academic achievement.

Suggestions of the Study

The following are the suggestions for further research studies.

- Same study can be extended further with a large sample of students.
- This study may be extended to compare the spatial ability and achievement among the high school students belonging to different locality of school of study.
- This study may be extended to compare the spatial ability and achievement among the high school students belonging to different medium of instruction of study.
- A study could be conducted on spatial ability and emotional maturity of high and higher secondary level.
- A study on spatial ability and decision making ability of college students may be conducted.

Recommendations of the Present Study

- 1. It is suggested that regular study habit training programmes in school must be arranged to improve the study habits.
- 2. It is suggested that teachers should help the students to frame the time- table for study. They should be instructed to adhere to it.
- 3. Parents should check whether their wards study in a quiet place away from disruption and disturbances.
- 4. It is suggested that teachers should correlate the subject matter with the life situations of the pupils, in order to make the subject matter interesting for the pupils.
- 5. It is suggested that university should make it mandatory for their students to visit the library; borrow books, magazines, newspapers and their visit should be marked with attendance there.

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